

We claim:

~~Patent claims~~

1. Method for optimizing transmission security and failure security in high-bit-rate data networks by means of signal line redundancy between network nodes (10, 11), whereby parallel signal lines (3, 4) between the network nodes for the transmission of data or items of information can optionally be occupied, or can be switched, as working lines or protection lines, as well as selectors (5), bridge circuits (12), and interface modules (13) respectively provided at the network node side, whereby an error message link or transmission link (14) is provided between the interface modules (13) of a node (10; 11),

**characterized in that**

a signal line pair (2), composed of the parallel signal lines (3,4) for incoming or, respectively, outgoing signal lines, is respectively terminated at the network node side with an interface module (13), whereby all interface modules (13) always contain, by means of the bridge circuit (12), the data or items of information that are transmitted via the signal lines (3,4), and, given a failure of one of the interface modules (13), indicated by the error message link or transmission link (14) arranged between the interface modules (13) of a node (10, 11), this error is immediately countered by a signal line changeover, and line errors are immediately countered by the provided interface module redundancy, whereby in addition messages of line errors or of the failure of one of the interface modules (13) can be transmitted between the interface modules (13) of the incoming and outgoing parallel signal lines (3,4) in each of the network nodes, by means of the error message link or transmission link (14) and the selector (5).

2. Method according to claim 1,

**characterized in that**

with respect to the selection of the respective signal line (3, 4), or, respectively, of the respective signal line pair (2), via which incoming data are forwarded by means of the selector (5), the interface modules (13) are regarded as line components.

3. Apparatus for optimizing transmission security and failure security in high-bit-rate data networks by means of signal line redundancy between the network nodes, whereby parallel

signal lines (3, 4) between the network nodes for the transmission of data or items of information can optionally be occupied, or can be switched, as working lines or protection lines, as well as selectors, bridge circuits, and interface modules respectively provided at the network node side, whereby each network node (10, 11) comprises at least two interface modules (13), and an error message link or transmission link (14) is provided between the interface modules (13) of a node (10; 11),

**characterized in that**

- each interface module (13) respectively stands in direct connection with a signal line pair (2) for incoming or, respectively, outgoing lines,
- data or items of information coming from a processing unit are routed to the at least two interface modules (13) of a node via the bridge circuit (12), and at the output side of the interface modules (13) incoming data or items of information that are present reach the processing unit by means of the selector (5), whereby
- the at least two interface modules (13) of each network node (10; 11) always contain, by means of the bridge circuit (12), the data or items of information that are transmitted via the signal lines (3,4), and, in case of line errors or interface module errors, by means of a changeover a selection takes place, via the selectors (5), between a working line or a protection line.